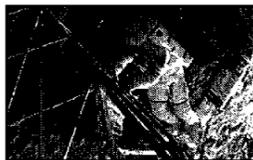




Weather eye

JSC is shifting into readiness for hurricane season, which officially begins this week. Story on Page 3.



Work study

Ames Research Center scientists are trying to find ways to balance body temperatures during space walks. Story on Page 4.

Space News Roundup

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May 31, 1993

No. 21

Task force says Hubble repairs 'achievable'

Recommends second mission be planned

A special task force has reviewed plans for the Hubble Space Telescope servicing mission and concluded that, "the mission is achievable."

The conclusion was driven by the fact that the spacecraft and most of its subsystems were designed for on-orbit maintenance.

The Task Force on the Hubble Space Telescope Servicing Mission, chartered by NASA Administrator Daniel S. Goldin in late January, reviewed all aspects of the first servicing mission currently scheduled for December 1993.

"We were asked to arrive at a judgment as to the likelihood of success of the repair and servicing mission," said Dr. Joseph F. Shea, chairman of the task force. "In our opinion, we

think the mission is achievable."

The task force pointed out, however, that the mission is complex and will require more extravehicular activity time than any mission to date. Given this complexity, the task force recommended that a second HST servicing mission be planned six to 12 months after the STS-61 flight to handle tasks that might not be completed during the first mission or respond to failures that occur in the intervening months.

Shea said planning and management changes, which have taken place over the

Please see **REVIEW**, Page 4



HUBBLE SPACE TELESCOPE

Hubble looks at heart of galactic collision

NASA's Hubble Space Telescope has looked into the heart of a galaxy created by the collision of two galaxies and peering deeply into its nucleus, discovered a remarkable pinwheel-shaped disk of gas surrounded by clusters of young stars born as a result of the merger.

The star clusters apparently were born as a result of the collision of two disk-shaped galaxies. The galaxy merger, which occurred about 1 billion years ago, triggered an infall of the gas which fueled the birth of new stars around the center of the galaxy.

"This may unlock the key for understanding how all globular clusters formed in ellipti-

cal," said Dr. Brad Whitmore of the Space Telescope Science Institute, Baltimore, Md. "The Hubble observation also shows how tiny disk-like structures might have formed in many other galaxies."

This discovery provides some of the best evidence to date for explaining the origin of giant elliptical galaxies. For more than a half century, astronomers have theorized about how such galaxies formed. Some theories propose that ellipticals formed from collisions between disk galaxies—flattened stellar systems resembling the Milky Way galaxy.

The striking Hubble image shows a spiral pattern at the galaxy's core, surrounded by

Please see **GALATIC**, Page 4

Scientists find new radiation belt around Earth

A new radiation belt of cosmic rays has been pinpointed several hundred miles above the Earth, scientists from the California Institute of Technology and Goddard Space Flight Center reported Tuesday.

A NASA satellite called Solar, Anomalous and Magnetospheric Particle Explorer, was orbiting 375 miles above the Earth when it measured the belt of particles from beyond the solar system.

The belt is most intense above a 5,000-mile strip of the Atlantic Ocean between the southern tips of South America and Africa, Caltech and NASA scientists said.

The belt is composed of particles known as anomalous cosmic rays, which are the result of the Sun's interaction with tenuous gas between the Milky Way's stars.

"We were pretty sure the belt was there, and now we've pinned it down along with its location, which we didn't know before," said Goddard's Dr. Tycho von Rosenvinge, a member of the SAMPEX team.

The first clear evidence for such a radiation belt was found by Russian and U.S. scientists in 1991 using information from a series of Russian COSMOS spacecraft. The belt is composed of particles different from those in the Van Allen belts.

The belt in which the anomalous cosmic rays collect is embedded within the inner of the two Van Allen belts. The geometry of these belts is determined by the Earth's magnetic field lines, which connect the North and South magnetic poles.

"The cosmic rays become trapped in this field, where they bounce back and forth between the poles of Earth's magnetic field," said Caltech's Dr. Richard Mewaldt.



JSC Photo by Mark Sowa

Bldg. 3 chef Leroy Turner, left, discusses the nutritional and calorie content of the cafeteria's food with registered dietitian Cindy Yuan and Cafeteria Operations Manager Harry Conran.

Cafeteria serving up new menu

Using a pinch of nutrition, a dash of value and a heaping spoonful of variety, the Bldg. 3 cafeteria staff is serving up a new menu this week for JSC employees.

The menu is just part of the many changes that have been going on in Bldg. 3 since Space Center Houston went into operation and relieved the burden of serving public visitors.

Among the changes are a full set of four breakfast specials, two lines where deli and hot sandwiches are made while you wait, and additional attention to the nutritional and calorie content of the cafeteria's offerings.

"After serving more than a million visitors every year, the Bldg. 3 cafeteria is now

devoted exclusively to employees," said NASA Exchange Operations Manager Teresa Sullivan. "Some of these services were already being provided in the Bldg. 11 cafeteria and will now be offered in Bldg. 3, too."

The NASA Exchange Operations office runs both cafeterias, as well as the Exchange Store and the Gilruth Center.

Cafeteria Operations Manager Harry Conran said the changes are designed to satisfy a number of employee suggestions that have been made in recent years, particularly since public visitors stopped using Bldg. 3.

Please see **CAFETERIA**, Page 4

Endeavour may hold for engine swap

By James Hartsfield

Preparations for the launch of STS-57 entered the home stretch this week, but as shuttle managers were closing out *Endeavour* for flight, two problems were discovered that may delay the launch.

Endeavour has been scheduled for a launch perhaps as early as 5:17 p.m. CDT Thursday, however, pending resolution of the problems. The two pieces of equipment engineers have been studying include a type of ball joint in the shuttle's 17-inch fuel line that allows the line, which extends from the external tank to *Endeavour* and a spring in an oxygen turbopump on one of *Endeavour's* main engines.

The flexible fuel line joint was found to have scratches on the ball at its center during inspections that followed a loud noise heard by technicians at the launch pad several weeks ago. Engineers believe the joint was stuck and popped loose when the fuel line was pressurized for a leak check, possibly causing the noise. As of Thursday, analysis of the joint was not complete, however preliminary indications were that the joint would operate well and not pose a problem for the launch. Managers were scheduled to reach a decision on the joint later that day.

Managers also were planning to make a decision Thursday regarding the main engine oxygen turbopump. A spring in the turbopump that helps align the bearings for the turbine shaft in the pump is stamped with a serial number believed to be in a location that may weaken the metal. Engineers discovered a similar stamp on a new spring and checked photographs of the pumps on *Endeavour*, finding that one spring in one pump may have the same type of mislocated stamp.

The turbopump may have to be replaced if analysis

Please see **SHUTTLE**, Page 4



New main entrance virtually complete

By Kelly Humphries

There are still a few finishing touches to put on JSC's new main entrance, but for all intents and purposes the construction will be complete this week when the new Avenue E traffic lights are activated.

The Metro-funded project won't be completely done until all of the new traffic lights are taken off their timers and hooked to the computer that controls the NASA Road 1 lights, and the new guard station is installed at Second Street and Saturn Lane.

"Were very pleased to have Metro complete this task and we believe it provides better ingress and egress for our workers," Center Operations Director Grady McCright said. "Once we get all the finishing touches put

on it and all the light sequences worked out to our benefit, I think all employees will be pleased that we did it. I want to thank the entire JSC population for being patient throughout this long and sometimes trying effort."

The \$3.8 million project, necessitated by the construction of Space Center Houston, included a new main gate for JSC across NASA Road 1 from the Nassau Bay City Hall, widening Saturn Lane to four lanes from the old Credit Union gate to the new entrance, adding additional turn lanes at the Saturn and Second Street intersection, and relocating Avenue E.

Metro's contractor, HUBCO Inc., was unable to relocate the old Credit Union guard station, so bids are

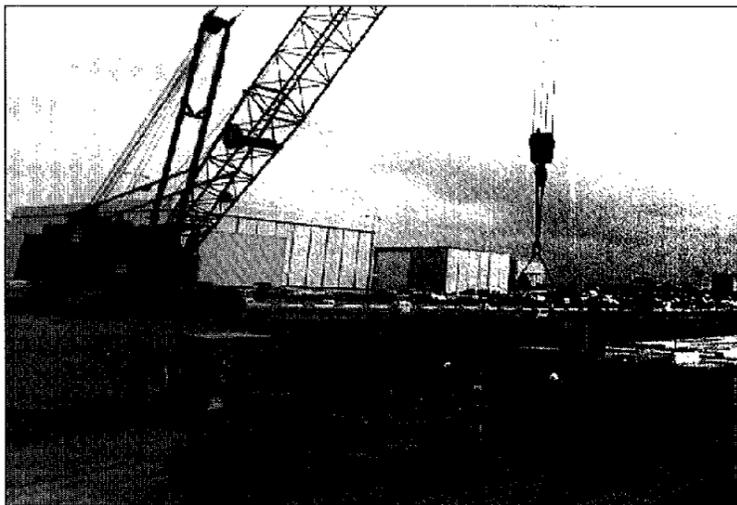
being taken to build a new one in the middle of Second Street. Construction is expected to be completed in June.

McCright said that in addition to improving access to JSC, the project helps separate JSC and Space Center Houston traffic. When both facilities used the old main entrance, there was some confusion and congestion that became especially troublesome at lunch time.

In other construction at JSC, workers for Brown and Root's Highway Division are in the midst of work on two contracts that make up an 880-space parking addition program.

One contract involves a large parking lot behind Bldg. 35 that will service the increasing number of

Please see **PARKING**, Page 4



JSC Photo by

Workers lay 9- by- 5-foot concrete box culverts behind Bldg. 35. The culvert will carry water from the Houston Lighting and Power cooling canal under a new parking lot.

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

Splash Town USA — Discount tickets: \$10.50.

Sea World in San Antonio — Discount tickets: adult, \$19.75; child (3-11), \$13.15.

Fiesta Texas, San Antonio — Discount tickets: adult, \$18.35; child (4-11) \$12.75.

Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$8.75.

Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4.50; AMC Theater, \$3.75; Loews Theater, \$4.

The Exchange Store also carries souvenir items such as shirts, jackets, pens, patches and tote bags. Civil servant and contractor employees also may order business cards through the Bldg. 11 facility.

JSC

Gilruth Center News

Sign up policy — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

EAA badges — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

Defensive driving — Course is offered from 8 a.m.-4:30 p.m. June 12. Cost is \$19.

Weight Safety — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. June 2. Pre-registration is required; cost is \$5.

Aerobics — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

Exercise — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Aikido — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

Scuba — Classes meet Tuesdays and Thursdays for four weeks beginning June 17. Cost is \$190, with a \$50 deposit required at registration.

Fitness program — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

JSC

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Sale: Dickinson, 4-3-2D on lg wooded lot, lg kit w/ceramic tile, study, game rm, screen porch, parking for boat/RV, \$122.5k. Shirley, 335-1607 or 335-0641.

Sale: 2-2 condo, Floating Week Magic Tree Resort, Orlando FL, minutes from Disney World, \$5.5k plus closing cost. x36027 or 532-6308.

Lease: Barringer Way condo, 2-1, W/D conn, stor area, pool, no pets, ex cond, \$450/mo. 486-2048.

Sale: Meadow Bend, 3-2-2, 1480 sq ft, FPL, sun deck, new carpet, fence, garage doors, \$69.9k. Nasser, x33685 or 334-1032.

Sale: Meadow Bend, 3-2-2, cul-de-sac, storm windows, lg side yard for boat or RV parking, 10 yr HOW, lg kitchen and LR, lg decked attic. Pete, x33571 or 334-2963.

Sale: Lake Livingston, Impala Woods at Onalaska, 30 x 70 lot, camp or build, 1/2 mi off water, util avail, paved roads, \$3k. Teena, x37787 or 442-6369.

Sale: Dickinson Bayou waterfront, 4-2.5-2, 100 yr old trees, pool, wet bar, FB, volleyball and horseshoe set up, alarm, sec lighting, 3/4 acre, \$224k. x34354 or 337-1640.

Rent: Winter Park, CO condo, fully furn, sleeps 6, hike, bike, fish, golf, horseback, mountains, streams, low summer rates thru Oct. 488-4453.

Lease: Univ Trace condo, 1-1.5, studio, FPL, alarm, W/D, cov parking, avail 6-1, \$500/mo. 870-1282 or 461-0527 ext 67.

Rent: Room in 3 BR house, La Porte area, non smoker only, \$300/mo + 1/2 util. 470-2761.

Lease: IBR condo, W/D, FPL, cov parking, sec alarm, new carpet, tennis. Jim Briley, 244-4632 or 488-7901.

Rent: Sagemont 4-2-2, 1.5 stories, recently completely rebuilt, \$675/mo. Minh, 333-6806 or 484-2456.

Sale: Timber Cove waterfront, 3-2.5-2, study, 2400 sq ft, open floor plan, ceramic tile floors, updated baths, lg cov deck, \$165k. 326-1278.

Rent: Clear Lake boat slip, roof, motorized boat hoist for pwr boats, \$125/mo. 474-4922.

Rent: Lake Travis cabin, private boat dock, CA/H, fully equipped, accom 8, wkly dly, \$425/\$90. 474-4922.

Sale: Nassau Bay, 3-2-2, 2200 sq ft, FPL, deck, new paint, CCISD, \$115k, x32458 or 333-9518.

Sale: LaGrange, TX, 2-1.1 cottage on 5 wooded acres, \$35k. Jennifer, x38668 or 386-0507.

Sale: LC lot, 82' x 130', \$9.5k. x36514.

Sale: Friendswood, 4-2.5-3 custom, 3.4 acre in exclusive area, 3100 sq ft, game rm, study, screened patio, monitored alarm, workshop, sprinkler sys, \$200's. 333-6045 or 992-1338.

Rent: Southern Colorado 2 BR, furn, sleeps 5, close to skiing, fishing, national forest, no smoking, no pets, day/wk/mo or longer. Bob, x30825 or 998-7372.

Sublet/Rent: The Palms apt South Shore Harbour, 1 BR, W/D, maid service, trash pickup, pool, \$400/mo, avail 5-24. x45132 or 538-1655.

Rent: Univ Trace condo, 1 BR, study, 1-1/3 baths, W/D opt, sec alarm, cov parking, brwn carpet, new paint, avail 5-24, \$495/mo. x48621 or 480-2417.

Rent: Galveston condo, furn, sleeps 6, Seawall Blvd & 61st St, swimming pools, cable TV, wknd/wkly/dly rates. Magdi Yassa, 333-4760 or 486-0788.

Sale: 3-2-2A, 1 story, lg LR, FPL, lg master BR and bath, Jacuzzi, 2 decks, \$78k. 482-2320.

Rent: Timeshare condo, anywhere in the world, \$575/wk, domestic, \$600/wk international. 282-3339 or 286-8417.

Cars & Trucks

'65 Dodge Dart 2 dr, HT, GT, 2 owner, ex cond, 58k mi. \$3200. Bob, 283-6892.

'78 Porche 928, brwn w/leather int, auto, ex cond, 75k mi, \$8500. Bill, x48889.

'71 Chevy Nova, V8, orig owner, \$4500. 480-1998.

'86 Silverado Suburban, 95k mi, needs some body work, \$5000. Alece, x48949.

'84 Fiero, red, A/C, std, sunroof, 88.6k mi, \$2100. x34587 or 488-0003.

'79 Toyota PU w/camper, BO. Tommy, x38204 or 271-5241.

'70 VW Bug, custom interior, clean body, ex cond, \$2000. Rick, 334-2036.

'67 Mustang Coupe, green/blk, 6 cyl, C4 auto, good cond, needs carb work, BO. Eddie, x38929 or 489-7778.

'89 Mazda RX-7 GXL, blk/blk int, every opt except CD and ABS, garaged, 39k mi, \$11,750 OBO. Joe, 280-4681 or 996-8885.

'85 Mustang convert, 3.8L V6, all pwr, clean, 55k mi, \$4950, consider trade. x30017.

'85 Ford Santa Fe custom van, loaded, 1 owner, garaged, \$5850. Don, x38039 or 333-1751.

Boats

Glastron Alpha w/trlr, all access, ready to sail, new mast and rudder, \$600. 488-7909.

'81 US Yachts 22 ft sloop w/4.5HP eng, hull just cleaned, ex cond, \$4k. Russ, x45979 or 554-5904.

'17 Boston Whaler, 85HP Mercury, Sportsman trlr, Bimini, \$4750. 326-1278.

Cycles

Sears his and hers 26", 18 spd mountain bikes, ex cond, \$250/pr. 282-4101.

'88 Hurricane, 18k mi, \$2700 OBO. x34204 or 480-2954.

'85 BMW K100/RS motorcycle, blk, ex

JSC

Dates & Data

Today

Memorial Day—Most JSC offices will be closed May 31 in observance of the Memorial Day holiday.

Tuesday

Cafeteria menu—Special: corned beef hash. Entrees: meatballs and spaghetti, grilled liver and onions, beef cannelloni, ham steak Hawaiian. Soup: split pea. Vegetables: winter blend mix, seasoned cabbage, breaded squash, lima beans.

Wednesday

Astronomy seminar — The JSC Astronomy Seminar will conduct an open discussion meeting at noon June 2 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

Cafeteria menu — Special: smoked barbecue link. Entrees: cheese enchiladas, roast pork and dressing, baked scrod, baked chicken, reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, Spanish rice, turnip greens, peas and carrots.

Thursday

Cafeteria menu — Special: chicken fried steak. Entrees: roast beef with dressing, steamed pollock, lasagna with meat, baked chicken, French dip sandwich. Soup: beef and barley. Vegetables: whole green beans, butter squash, cut corn, black-eyed peas.

Friday

Cafeteria menu — Special: fried chicken. Entrees: broiled cod fish, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots Vichy, Italian zucchini, breaded okra.

June 7

Cafeteria menu — Special: Meat sauce and spaghetti. Entrees: wieners with kraut, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of asparagus. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

June 8

TSP briefing — A briefing on the Thrift Savings Plan is scheduled for 9:30 a.m. June 8 in Bldg. 45, Rm. 128. Open season for TSP runs from May 15-June 31. For more information, call the Employee Services Section at x32681.

June 9

Toastmasters meet — The Spaceland Toastmasters Club will meet June 9 at 7 a.m. at the House of Prayer Lutheran Church on the corner of Bay Area Blvd. and Reseda Drive. Call Jim Morrison at 480-9793 for more information.

Astronomy seminar — The JSC Astronomy Seminar will meet at noon June 9 in Bldg. 31, Rm. 129. A field trip to inspect the Liquid Metal Mirror Telescope II is planned. For more information, call Al Jackson at 333-7679.

Freedom Fighters meet — The Space Station Freedom Fighters will meet at noon and 5 p.m. June 9 in Rm. 160 of the McDonnell Douglas Tower, Space Center Blvd. and Bay Area Blvd. For more information, call David Cochran at 482-7005.

June 14

Space Society meets — The Clear Lake Area Chapter of the National Space Society will meet

June 14 at 7 p.m. at the Freeman Memorial Library. Rich Kolker will discuss "Single Stage to Orbit Vehicles." The meeting is free and open to the public. For more information, contact Marianne Dyson at 486-4747.

June 16

Toastmasters meet — The Spaceland Toastmasters Club will meet June 16 at 7 a.m. at the House of Prayer Lutheran Church on the corner of Bay Area Blvd. and Reseda Drive. Call Jim Morrison at 480-9793 for more information.

Astronomy seminar — The JSC Astronomy Seminar will conduct an open discussion meeting at noon June 16 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

June 18

Juneteenth Picnic — The NASA/JSC Black Cultural Association will host its "Annual Juneteenth Picnic/Ron McNair Scholarship Fundraiser" from 3 to 9 p.m. June 18 at the Gilruth Center. Deadline for purchasing tickets is noon June 11. The ticket price includes a barbecue dinner, dessert, drinks and entertainment. A softball tournament also will be held. For more information, contact Charles Hoskins, x30607; Judith Elam, x34028; or Jackie Wilson, x30278.

June 20

TSP briefing — A briefing on the Thrift Savings Plan is scheduled for 9:30 a.m. June 20 in Bldg. 45, Rm. 119. Open season for TSP runs from May 15-June 31. For more information, call the Employee Services Section at x32681.

cond, \$3500 OBO. Roger, x39120 or 554-4960.

Audiovisual & Computers

IBM compat PC, XT Turbo, 32 MB HD, 5.25 FD, 101 kybd, mouse, EGA monitor, DOS 3.1, \$400. Rosie, 282-3631 or 538-1909.

Macintosh Iix, 5 MB RAM, 105 MB HD, mono monitor, ext kybd, modem, Claris SW, Shareware, complete sys, \$1600 OBO. 474-2368.

1970s model Wurlitzer jukebox, \$450. 282-5282.

TI 99-4A. 944-3523.

2 MTX truck boxes, w/8" woffler and cone tweeter, good cond, \$75. 486-8260.

Super Star Wars by LucasArts for Super Nintendo, new, \$45. Marc, x38578 or 334-5982.

SX600 synthesizer w/Calzone hard traveling case, stand, Crate amp, Tascam Porta 3 recorder, Atus AM100 stereo mixer, accessories, \$700. 326-3762.

Photographic

Pentax SF1N, 33mm, auto focus, 28-80 zoom lense, \$390 OBO. 554-5005.

Argus C-3, Dejur Super 8 cameras, slide cases and trays, projector screen, projectors, film editor, lighted slide sorter. 481-1605.

Pets & Livestock

Six mo old yellow Lab, all shots, papers, house broken, \$150. x32168 or 474-7982.

Free to good home, approx 6" long common oscar, has outgrown aquarium. Keith, 335-2514 or 286-9808.

Tiny Toy Poodle, AKC reg male, apricot, stud fee \$300. Rick, 334-2036.

Musical Instruments

Ensoniq SDP-1 elec piano, \$500; Peavey KB-60 combo amplifier for kybd, \$100; Peavey PV unidirectional microphone w/pro mic stand and cord, \$75. x37359.

Lost & Found

Lost gold tie chain in bldg 1 on Mar 31, please return, sentimental value. 929-7323.

Household

White washed oak, oval pededtal table w/5 chairs, light mauve cushions. Dorothy, 482-1505.

Wedding ring quilt, \$325; Oneida flatware, new, serv for 8, heavy wooden table w/4 chairs. 783-9164.

Hide-A-Bed sofa, Simmons qn sz, inner-spring matt, good cond, \$150. 488-4069.

Kg sx waterbead, semimotionless, blk leather hdbd, \$400. x36696 or 332-9102.

Amana reffrig, 18 cu ft, wht, 5 yrs old. Fred, 944-3523.

Glass dining table w/4 chairs, table 4 ft long, 3 ft wide, 1/2 in thick, \$175. Brent, x36456.

Upright vacuum cleaner, good cond, apt sz. x47746 or 480-9646.

Maytag W/D, working cond, green, \$100 both OBO. 488-8443.

Qn sz sleeper/sofa, cream w/lt blue, lt grey, rust and tan stripes. \$100 neg. 335-2326.

Coffee table, \$40; 2 end tables, \$25 ea; ex cond. Shawn, x38340 or 472-7526.

Sm sofa, \$40; coffee table, \$30; sm computer table w/hutch, \$50; kg sz bed, \$160; 2 oak banquet tables, \$30 ea. Gary H. x32144.

Entertainment center, whitewashed oak, ex cond, \$450. 480-9425.

Wards Signature Series refrigerator, 22 cu ft, dk brwn, side-by-side, \$100. 486-1727 or 282-4558.

Kenmore elec dryer, gold, age unk, works well. \$20. 282-4558.

Two blue sofas, good cond, \$150 ea. JoLynn, 941-4307.

Wanted

Want used whitewater kayak, any cond. Ronnie, 538-1649.

Want professional Bocce set, lawn bowling. Rick, x34997 or 488-3527.

Want van pool riders, from Sugarland, Westwood Park and Ride, then get on HOV lane to JSC area. Alice, x35234.

Want broken VCR, to use as tuner for external monitor, tape section unimportant. Jim, 335-2539.

Want old freestanding bookshelves, futon, full sz washer. 486-2148.

Want toy trains and StarWars toys. Ron, 482-1385.

Want portable gas generator, 3.5-4 kW. Andy, 332-9105.

Want roommate, nonsmoker, 3 BR house, LaPorte area, \$300/mo + half util. 470-2761.

Want weight bench w/weights. Philip, 486-4700.

Want cheap work/school car, minor repairs OK. 486-4700.

Want female roommate to share house in Seabrook, 10' from JSC, \$300/mo + 1/2 util, no pets. Ann, 282-3790.

Want used 1/2" plywood, any grade or finish. Ronnie, 538-1649.

Want vacuum pump for A/C or refrigeration, working or nonworking. Ronnie, x32539 or 538-1649.

Want 350 engine, running and reasonable, 1982 or later. x48153.

Want commuter(s) interested in carpooling, Heights to JSC. Diane, x37080.

Want good quality, reasonably priced rocking chair and baby items, crib, changing table and swing that hangs in doorway. x37441 or 921-4765.

Want pop-up camper less than 1000 lbs and less than 10 yrs old in good cond, prefer A/C. Jeff, 333-7010 or 482-5393.

Want used piano in good cond. x35145.

Want personnel to join VPSI Vanpool departing Meyerland Park and Ride lot at 7:05 a.m. for JSC. Vanpool consists of on-site personnel working the 8 a.m./4:30 p.m. shift. Currently have 11 good members and looking for 6 to 8 more. Travis Moebes, x45765 or Don Pipkins, x35346.

Miscellaneous

White, beaded, Qn Anne neckline w/full

train wedding gown, bow in back, gown bag, sz 10, \$600; Symphony veil, white, \$200; hoop type slip, \$20. 282-4101.

Stainless steel DE swimming pool filter, \$100. Ralph, 409-765-7665.

Complete C-128 set-up. Rick, x34997 or 488-3527.

Qn sz sleeper sofa, good cond, Pro-Form exercise bike, good cond, BO. Ron, x30887 or 334-7530.

8 copies of "Death of Superman" newsstand edition, first printing, \$800; set of stoneware, 8 place setting, ex cond, BO. Ron, x30887 or 334-7530.

Almost new Franklin Planner, classic sz Analine blk leather cover, shoulder purse style, was \$155, now \$100. Katie, x33185.

Ivory wedding gown w/pearls, sequins, V-neck, chapel length train, sz 6-8, veil and petticoat, \$400. x36696 or 332-9102.

Lounge chair, medical type, used for dialysis treatment. E. Rubenstein, x34807 or 532-2211.

10.3 cu ft chest freezer, \$175; puffy skirt for under wedding gown, \$30; 10 spd women's 27" bike, \$75. 280-0031.

Tracker Geo tires, Tiger Paw XTM/P195/75R15, 4 ea, new, w/rims, \$200 for all. Tommy, x38204 or 271-5241.

Storm Watch

JSC's preparedness efforts shift into gear as hurricane season starts

By Kelly Humphries

Tuesday is the official start of hurricane season, which means it's time for JSC emergency preparedness officials to start preparing for the worst while hoping for the best.

Because tropical storms and hurricanes are a fact of life on the Texas Gulf Coast, the center will be placed in a constant state of readiness from now until November, although most storms that affect the Clear Lake area develop in August and September.

Whether the area is statistically "due" for a big storm—a tropical storm usually hits the area every three years and it's been four years since one did; a major storm traditionally hits every 10 years and the last major hurricane to hit was Alicia in 1983—Emergency Preparedness Officer Bob Gaffney said it is his job to help make sure that JSC is ready.

As emergency preparedness officer, Gaffney works with JSC Emergency Preparedness Manager Keith McQuary to ensure that the comprehensive preparedness plan published every year—and due out soon—is followed. That means helping coordinate the work of Area Protection Teams, emergency planning representatives in every organization and keeping emergency supplies ready through logistics contractor Pioneer Contract Services.

"The main thrust would have to be on preparation, those things that you can do to mitigate the effects of a storm or minimize the degree of damage that they can do," he said. "Preparation is key to successful recovery; we'll recover regardless, but we can have a better chance of recovering if we prepare adequately in advance."

The first step is awareness, Gaffney said, and toward that end the JSC Television Distribution System will broadcast a 27-minute hurricane preparedness videotape every day this week at 9 a.m. on Channel 3.

Then, at 9 a.m. Friday, the JSC Emergency Preparedness Office will sponsor a hurricane workshop for employees in Teague Auditorium. The program will include information on JSC's program to protect employees and facilities, as well as information on personal disaster survival plans. All employees are invited to attend as their work loads permit, and Gaffney said it would be especially useful to Gulf Coast newcomers.

"We've had a lot of new employees move to the southeast Texas region in the last four years who haven't the slightest idea what a hurricane is," Gaffney said. "It's something to be respected and avoided."

Also this week, Gaffney will represent JSC at the 1993 Hurricane Workshop at South Shore Harbour in League City. The conference is sponsored by the Houston office of the National Weather Service.

JSC representatives also will participate in an upcoming seminar hosted by the Texas Department of Emergency Management that is designed to help coordinate preparedness activities of area communities.

"Through the training we can bring those concepts and ideas back to the center and apply them so that we're doing the same things that the communities are doing," Gaffney said. "In the past, our plans have been oriented toward recovery and survivability, but we haven't necessarily done a good job of telling the community what we're going to do or what we have available."

Although emergency preparedness workers here are responsible for taking care of JSC first, the center can pitch in and help in the community on a case-by-case basis, and sharing information about the center's plans will help community leaders know what kind of help may be available.

With hurricane season upon us, JSC has

begun a state of continual preparedness or Action Level I in anticipation of the summer storm season.

At Action Level I, personnel assigned to responsibilities for hurricane and severe weather plan implementation are required to assess, review and prepare the plans to ensure a state of readiness. Level I ensures that JSC will have a full complement of rations and supplies to support the next level of activity.

"We're in a constant state of preparedness so we can protect the taxpayers' investment," McQuary said.

If a hurricane threatens the Clear Lake area, JSC preparedness moves to Level II and, at the discretion of the Center Operations Director Grady McCright, officials open a hurricane command post in Bldg. 30.

Each JSC organization has a designated emergency planning representative and an alternate who are kept informed on the status of the action levels during a hurricane alert and have information on preparing for a hurricane.

Once the threat of hurricane grows great enough, JSC Director Aaron Cohen will decide whether to close the center and begin evacuation of all non-essential personnel. Action Level III then starts.

"The expectation really is that employees will take care of their work places, and the Area Protection Teams will come out and check the utilities to see what they can turn off," Gaffney said. "My major focus is survivability and recovery for the center. There are some steps that people should take before the center is closed, when the center director makes that decision, to protect the work place."

Such preparations include unplugging computer terminals and covering them with plastic bags, raising blinds to prevent additional wind damage should windows break, storing classified and other important materials in safe areas, and closing all doors.

"At that speed, venetian blinds become deadly, razor-sharp missiles," Gaffney said.

Also during this time, area protection teams ready JSC for a storm—checking buildings, picking up loose objects outside and securing all possible hazards.

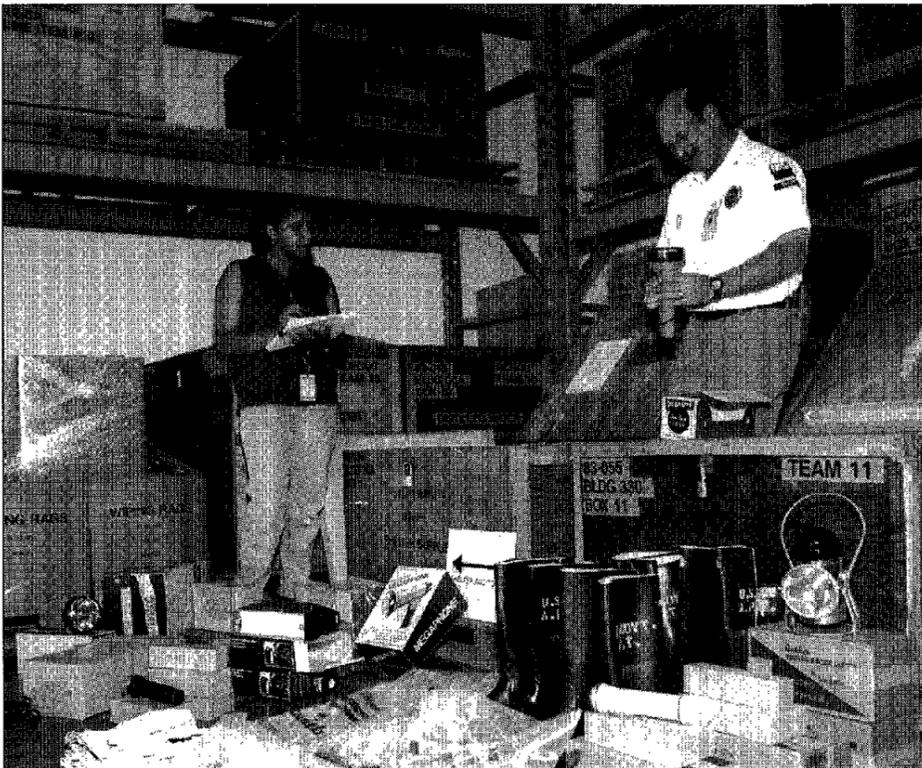
"Until the winds get too strong or the weather gets too hazardous for people to work in, the area protection teams are out checking things to see if anything has broken loose and try to tie it down before it becomes hazardous to the rest of the center."

When the storm hits, Level IV starts. The Hurricane Rideout Team gathers at its posts and waits for the storm to subside. Activities during the storm are limited to only essential emergency repairs that can be performed without endangering the personnel safety. The team moves back into action once the storm passes, assessing the damage and arranging for necessary repairs.

In the event of an evacuation, employees can continue to stay in contact with the center through the use of two recorded phone services. The Emergency Information Line, x33351, provides potential storm information, plans for safe-guarding work areas and information throughout the year on other area emergencies, and the Employee Information Service, x36765, provides information about closings.

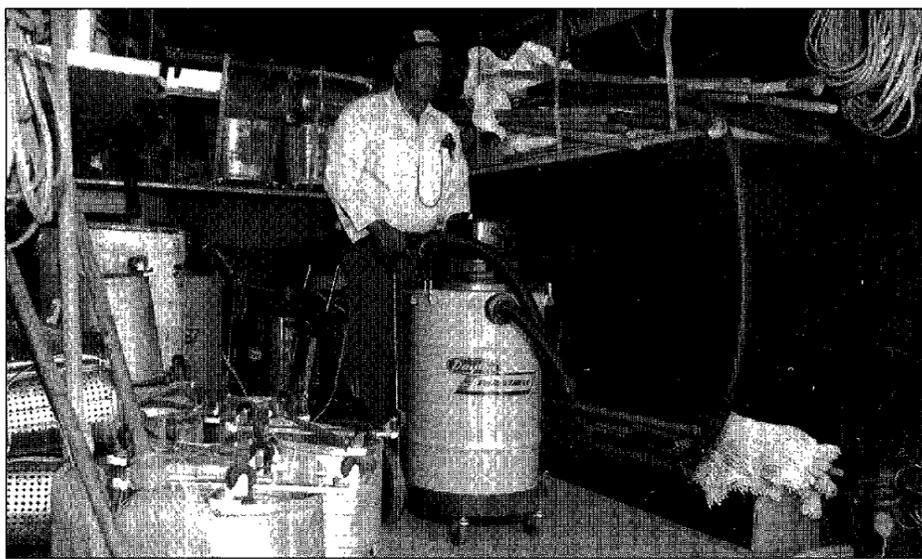
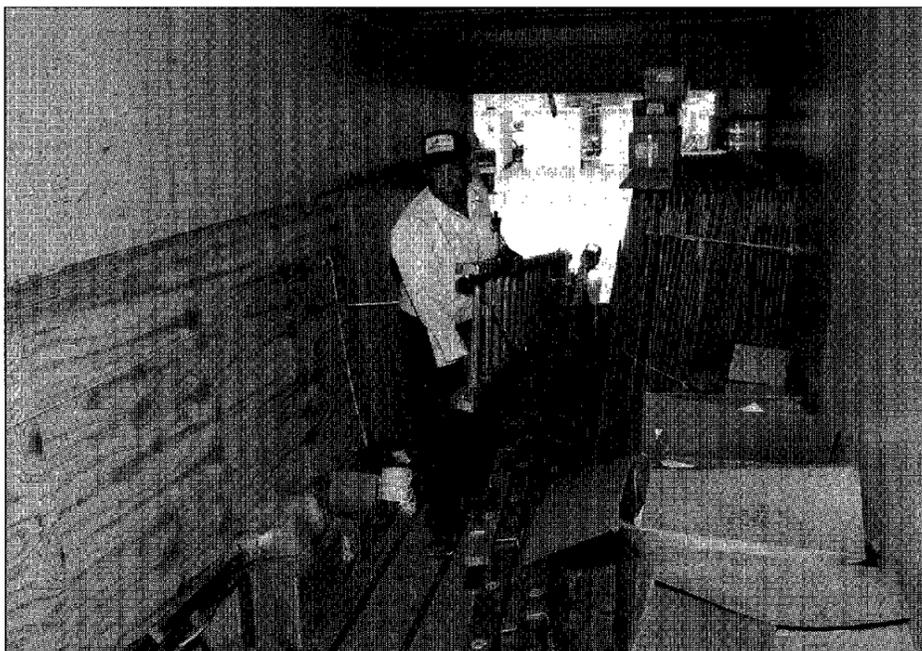
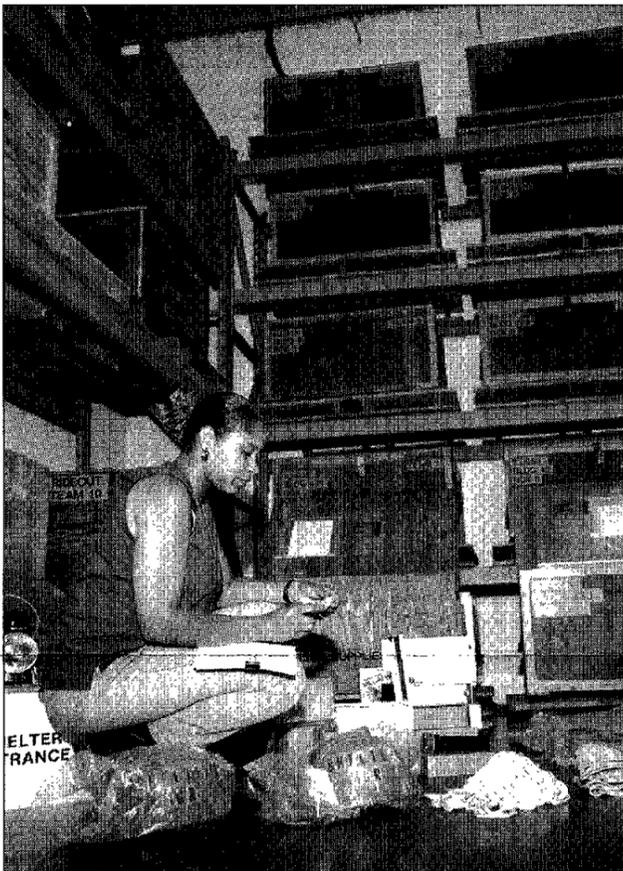
Center personnel will be notified when to return to work through the information services and radio and television reports.

Gaffney warned that the greatest loss of life during hurricanes usually is due to flooding. He encouraged employees to contact their community's emergency management representatives about whether their homes are low enough to be affected by a storm surge, to stock up on emergency supplies and to make sure they have personal action plans. All of these subjects will be covered in the Friday workshop. □



Top: Monique Johnson of Pioneer Contractor Services, a warehouse worker for the Logistics Division contractor, takes inventory of hurricane supplies in the Bldg. 330 warehouse with the help of Maj. Kenneth Hill, assistant security chief and training director for Mason & Hanger. **Right:** Johnson looks at the contents of one of the Area Protection Team supply boxes. The boxes include items such as hard hats, rubber boots, flashlights, gloves and other equipment helpful in securing the center. **Below:** Laborer Foreman O.L. Carter and laborer Pedro Garcia check on ladders, plywood and other equipment in a hurricane supply trailer near Bldg. 326. The trailer contains items that the Johnson Controls workers would use to repair or secure buildings damaged in a storm. **Bottom:** Carter checks out an industrial strength wet vacuum that would be used by Johnson Controls personnel to clean up after storm damage.

JSC Photos by Scott Wickes



Ames scientists hoping to improve space suit heat balance

Scientists at Ames Research Center are measuring how the human body reacts to exercise here on Earth that is similar to astronauts working in the microgravity environment of space flight.

Astronauts have used space walks to rescue and repair satellites and perform other important tasks outside various spacecraft throughout the space program, but space walks are not yet a routine method of exploration. Assembly, maintenance and repair of the space station will require space walks to become an everyday part of working in space, said co-investigator

Rebecca Williamson.

"A logical step is to try to improve the productivity of the space walking astronaut to increase the amount of labor performed per space walk hour," she said. Current technology requires the astronaut to control the temperature of the liquid cooling garment manually. The garment is a tight-fitting system inside the space suit to remove heat generated when the astronaut works.

"Experience with the current extravehicular activity system shows that heat balance inside the suit is poorly controlled," Williamson said. "Some areas of the body are too warm,

while others are uncomfortably cold."

The Ames researchers hope an advanced heat balance control system could determine an astronaut's metabolic rate by analyzing the air exhaled by the astronaut. The system then would automatically change its cooling function. "This would lead to greater comfort for the astronaut, resulting in less fatigue and greater productivity," she added.

"The exercise involves using the arms rather than legs to crank a device similar to a bicycle while lying on their back," Williamson said. Known as an ergometer, the device measures the amount of work done

by the muscles. The ergometer can be locked in place or allowed to "float," producing a feeling of weightlessness. Restraints, simulating foot-holds in the shuttle's payload bay, hold the volunteer's feet in place.

The ergometer is inside a controlled atmosphere chamber. This allows scientists to measure changes in air temperature and humidity inside the chamber as the volunteer exercises. A nose clip and mouth piece permit measurement of the amount of carbon dioxide and oxygen exhaled. Heart rate and skin temperature are monitored and recorded as well.

The 10 male volunteers, ages 20 to 45, exercise according to five different profiles. These include low, moderate and high level, constant workloads.

Another exercise profile is called maximum output, in which the subject cranks as hard as possible for one minute after a five-minute warm-up period. The final profile involves exercise at workloads that change every five minutes. Each volunteer will perform each profile three times over a period of several weeks. The length of each profile varies from about 14 minutes to 45 minutes.

Fastener maker pays \$2.5 million to settle

A company that was accused of defrauding the government in procurements of fasteners — some used by NASA — has settled with the U.S. Department of Justice for \$2.5 million.

SPS Technologies has agreed to pay \$2.5 million to resolve the government's claims under the False Claims Act and common law that SPS supplied untested and improperly tested aerospace fasteners to the military and NASA. SPS manufactures nuts, bolts and screws in Jenkintown, Pa., and Santa Ana, Calif., for use in commercial and military aircraft engines and parts.

The civil settlement resulted from information supplied by SPS under the government's voluntary disclosure program, which encourages

self-policing and disclosure by Department of Defense contractors. Investigations of the information were conducted by the Defense Criminal Investigative Service, the NASA Office of the Inspector General and the Defense Contract Audit Agency.

The government, in its suit, alleged that SPS had changed some failing test scores to passing, submitted false certifications that all dimensional specification were met when they were not, falsely certified that all destructive tests had been performed when they had not, falsely certified that all laboratory tests were performed and marked some fasteners to give the appearance that hardness tests had been performed.

Small office oversees work with Russia

JSC has formed a small office to support the evolving and increasing relationship between NASA and the Russian space community, led by Don Puddy.

The U.S./Russian Programs Office will oversee all joint programs between the United States and Russia and the oversight of technol-

ogy assessment efforts.

Puddy has been appointed special assistant for U.S./Russian Programs. Mark T. Severance has been assigned as his assistant, and Janice A. Read will be secretary.

The office is in Bldg. 1, Rm. 834, and will use Mail Code AR. The office's phone number is x33916.

Financial Management moving to T-585

Personnel in the Office of the Comptroller's Financial Management Division will begin a move from Bldg. 9 and 17 to Bldg. T-585 on June 7.

Travel funding, cashier and collec-

tion agents will remain in their current offices in Bldg. 1.

The move, which is expected to be complete by June 16, will not affect any organizational codes or telephone extensions.

Shuttle managers discuss delay

(Continued from Page 1) The stamp could significantly weaken the spring. Managers could either replace the pump in the one engine, a process that could take around two weeks, or replace the entire engine, a process that would take about one week.

Elsewhere, work continued to ready *Discovery* for launch on

STS-51 in mid-July. This week, workers prepared to install the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer and Shuttle Pallet Satellite in the cargo bay. Also, they installed the forward steering jets, serviced the drinking water system, checked the fuel-line doors and prepared to install the main engines.



JSC Photo by Mark Sowa
COLORFUL COSTUMES—Asian Pacific American Program Council Member Marian Li talks with Vietnamese cultural dancers during the recent observation of Asian Pacific American Heritage Month at JSC. The dancers are, from left, Judy Tran, Carling Nguyen, Jennifer Nguyen and Jackie Dan. The JSC Asian Pacific American Program Council honored the contributions of Asian Pacific Americans with workshops and speeches May 21.

Cafeteria becoming more health conscious

(Continued from Page 1)

"We're just trying to give the employees what they want," Conran said. "In general they're looking for a good value in the food they buy, and they're more nutrition conscious. I think they'll find that we've been very responsive."

Between 7 and 10 a.m., Bldg. 3 now is offering four breakfast specials that range from \$1.65 to \$2.30. The Columbia includes one egg and the Discovery includes two. Both have two slices of toast or biscuits, jelly and butter. Hot cake specials are the Atlantis, with one pancake, and the Endeavour, with two pancakes. Both include butter and syrup. All specials include two bacon slices or sausage links, or one sausage

patty, and coffee or tea.

The new lunch menu goes into effect this week, and includes a greater variety of entrees and vegetables each day, as well as a salad bar. The cafeteria staff continues to expand the hot and cold sandwich lines with offerings such as steak, patty melts and grilled chicken. Employees can even order ahead for breakfast or lunch from the grill by calling x34335.

"For the health conscious, the cafeteria will keep fried foods to a minimum," Conran said. "Healthful cooking methods of grilling, broiling and steaming will be utilized. In addition, we will soon begin posting the calorie counts of certain food items to help employees keep track of their

calorie intake for lunch. In this area, we will be supported by Cindy Yuan, a registered dietitian." Yuan is a consultant to Kelsey-Seybold, which operates the JSC Clinic.

To initiate this health consciousness, the cafeteria has established a standard low-calorie special available every day. It includes a cup of vegetable soup (60 calories), an eight-ounce baked potato with chives and Molly McButter (222 calories), a garden salad (30 calories) and low-calorie French dressing (44 calories). The low-cal lunch costs \$3, includes a total of 356 calories, and allows no substitutions.

Menus are published weekly in Space News Roundup, and are on a recorded message at x30241.

Galactic collisions offer possible explanation for elliptical galaxy shapes

(Continued from Page 1)

bright star clusters. "I knew I had a major result within 10 seconds of looking at the Hubble picture," Whitmore said.

The pinwheel-shaped disk has an uncanny resemblance to a face-on spiral galaxy, yet it is only 10 thousand light-years across — about 1/20th the size of the total galaxy. The gas and stars in the disk swirl around the nucleus, mak-

ing a spiral pattern like cream poured in a cup of coffee. The mini-spiral contains enough gas to make 8 billion stars like the Sun. Though several of the clusters were first spotted from ground-based telescopes, their true nature was uncertain until the Hubble observations.

Hubble's resolution is so good that the astronomers can measure the diameters (0.04 arc seconds,

the apparent size of a dime at a distance of 80 miles) of the bright star clusters seen in the same image as the spiral disk. They turn out to be about 60 light years across, the same size as globular clusters that orbit the Milky Way galaxy. The globular clusters found in NGC 7252 are considered the progenitors of similar clusters that orbit the Milky Way galaxy.

In the 1920s, American astron-

omer Edwin Hubble classified galaxies according to their spiral or elliptical shape. A key difference is that stars are concentrated in a disk in spirals, but are distributed in a diffuse, roughly spherical distribution in ellipticals.

Since Hubble's time, astronomers have sought an explanation for the different types of galaxies. During the past decade, the hypothesis that spiral galaxies can

collide and merge to form elliptical galaxies has become increasingly popular.

Located 300 million light-years away in the constellation Aquarius, NGC 7252 has been considered the prototypical example of a merger between two disk-shaped galaxies. The galaxy has a pair of long tails that are unambiguous evidence of the effects of gravitational tidal forces from a galaxy merger.

Review panel says Hubble servicing mission should be fully simulated

(Continued from Page 1)

past few months, will improve the likelihood of success. "We support the appointment of a mission director, and believe that such a position, with authority and resources, is necessary if the mission is to be carried out with confidence," Shea said.

The task force report also concluded that a full end-to-end simulation of the EVA in the neutral buoyancy simulator at the Marshall Space Flight

Center, Huntsville, Ala., which is currently in the planning stage, is "essential to a successful mission."

"There are some areas, like schedule, where we still have some concerns," Shea said. "We think the timelines for the EVAs are very tight and some of the hardware is not fully assembled. But we were very pleased to see that NASA extended the mission duration and the number of EVAs for the flight."

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor Kelly Humphries
Associate Editor Kari Fluegel

Parking lot project adds spaces

(Continued from Page 1)

employees working on the center's east side since the construction of Bldg. 4S, while the other involves four smaller lots near Bldgs. 9, 24, 29 and 110.

The large lot has involved some extensive earth work to minimize the walking distance for employees. This was made possible when JSC and Houston Lighting & Power modified a cooling canal easement that allowed JSC to redirect the water flow and build the parking lot

over an underground culvert.

Ed Faircloth, Gilbane Construction's monitor for both projects, said 9 by 5 foot concrete box culverts are being laid in the canal bed, which was first dredged of its silt. That overburden is being temporarily stored north of the pecan orchard and will be used to fill in low place around the center once it dries.

All of the lots are about 25 percent complete, Faircloth said. The small lots should be completed by Aug. 1, and the big lot by Sept. 23.